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09/878,002	06/08/2001	Joseph Neev	YBEI-BQ62	1771

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EXAMINER

NGUYEN, DUNG T

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/878,002

Applicant(s)

NEEV ET AL.

Examiner

Dung (Michael) T Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.



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## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 20 is objected to because of the following informalities: "said second mirror 20" should be changed to --- said second mirror ---. Appropriate correction is required.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: ref. # 16 in Fig. 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: ref. # 17 in Fig. 3. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1, 19, 21, 23-27, 33 and 35, the claims fail to recite the structural relationship between the gain medium and a saturable absorber.

The remaining claims are dependent on the above rejected claims and therefore are also rejected.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Zayhowski (US 5,394,413).

With respect to claims 21-23, 25-26, 28-30, 32, and 34-36, Zayhowski shows in Fig. 1 a passively Q-switched laser comprising a resonant cavity 10 formed between a 1<sup>st</sup> mirror 16, and 2<sup>nd</sup> mirror 18, a gain medium 12, a laser-diode pump source 22, and a saturable absorber 14 disposed with the resonant cavity 10 and the output pulses having a peak power in excess of 10,000 times the pump power (col. 2, line 60).

With respect to claims 24 and 27, Zayhowski shows in Fig. 1 a passively Q-switched laser comprising a resonant cavity 10 formed between a 1<sup>st</sup> mirror 16, and 2<sup>nd</sup> mirror 18, a gain medium 12, a laser-diode pump source 22, and a saturable absorber 14 disposed with the resonant cavity 10 and the output pulses having a duration of less than 1 nanosecond (col. 2, line 59), the gain medium 12 and the saturable absorber 14 being two separate materials comprised of dopants in a common host, the gain medium 12 and the saturable absorber 14 being bonded by diffusion bonding (col. 5, lines 22-36).

With respect to claim 31, Zayhowski shows in Fig. 2 a pump source comprises an optical fiber 30 coupled to the first mirror 16 for pumping the gain medium 12.

With respect to claim 33, Zayhowski shows in Fig. 1 a passively Q-switched laser comprising a resonant cavity 10 formed between a 1<sup>st</sup> mirror 16, and 2<sup>nd</sup> mirror 18, a gain medium 12, a laser-diode pump source 22, and a saturable absorber 14 disposed with the resonant cavity 10 and the output pulses having a peak power greater than 100 kW (col. 5, line 55).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zayhowski (5,394,413) in view of Georges et al. (6,373,864).

With respect to claims 1-3, 7-8, 11-12, and 14, Zayhowski disclose all limitations of the claims except for a Yb:YAG medium and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium. Georges et al. teach in Fig. 2 a Yb:YAG medium (col. 7, line 9) and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium (col. 5, lines 9-12). For the benefit of a Q-switched microlaser, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Zayhowski a Yb:YAG medium and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium as taught by Georges et al.

With respect to claims 4-6 and 15-17, Georges et al. disclose the gain medium is doped with Yb and the saturable absorber is doped with Cr, and the host material comprises of YAG (col. 7, lines 9-11).

With respect to claims 9-10, Zayhowski shows in Fig. 2 a pump source comprises an optical fiber 30 coupled to the first mirror 16 for pumping the gain medium 12.

With respect to claim 13, Georges et al. disclose a resonant cavity length is 1.5 mm which satisfies the claim.

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With respect to claim 18, Zayhowski shows in Fig. 1 the mirrors 16 and 18 are flat.

With respect to claims 19-20, Zayhowski disclose all limitations of the claims except for a Yb:YAG medium and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium. Georges et al. teach in Fig. 2 a Yb:YAG medium (col. 7, line 9) and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium (col. 5, lines 9-12). For the benefit of a Q-switched microlaser, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Zayhowski a Yb:YAG medium and two undoped pieces diffusion bonded to outer surfaces of saturable absorber and gain medium as taught by Georges et al.

#### **Citation of The Pertinent References**

The following US patents are being made of record, even though they were not relied upon in this Office action, for being similar in subject matter, and may be relied upon in any future Office Actions: US 6023479, 6101201.

#### **Communication Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (703) 305-7159. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 306-5511 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Nguyen (Michael) Dung  
July 25, 2003

  
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